

REMARKS

Claims 54-64 and 75-85 are pending and stand finally rejected. Along with the RCE, Applicants have amended claims 54 and 81-85. Upon entry of the amendments, claims 54-64 and 75-85 remain pending.

Support for amendments to claim 54 are found in the specification as originally filed, for example at paragraph [0027] and in paragraph [0032], describing the hydroxyl functional copolymer of the claims. Support for the amendment to claim 54 reciting a gel reducing additive with two or more hydroxyl groups is found for example at paragraph [0026]. Claims 81-85 are amended to recite dependency from claim 78. Applicants respectfully request entry of the amendments.

REJECTIONS OF RECORD

According to the April 8, 2008 Office Action, all of the rejections are repeated from November 9, 2007. According to the November 9, 2007 Office Action, all of the § 103(a) and double patenting rejections set forth in the rejection of June 26, 2007 are repeated. Accordingly, Applicants address here the § 103(a) and double patenting rejections set forth in the Non-final Rejection of June 26, 2007, pages 2-7, paragraphs 4-10.

INFORMATION DISCLOSURE STATEMENT

Applicant draws the Examiner's attention to the enclosed Information Disclosure Statement, citing a European Patent Application No. EP 0 466 057, cited recently by a Chinese Examiner in related prosecution. An English translation of the Chinese office action is also enclosed for the Examiner's consideration. The cited reference in the IDS discloses extrudable polyvinyl alcohol compositions containing thermoplastic polyurethane. The cited European patent appears to be an equivalent of U.S. Pat. No. 5,028,648. Applicants respectfully request the Examiner return a signed copy of Form 1449 with the next office action.

REJECTIONS UNDER 35 U.S.C. § 103

The amended claims do not recite the mono-functional alcohols of Camilleri

Claims 54-56, 60-61, and 75-79 are rejected as obvious over the Bonk reference (U.S. Pat. No. 6,203,868) in view of the Camilleri reference (U.S. Pat. No. 3,718,622). Applicants respectfully traverse the rejection as applied to the amended claims and request reconsideration.

The combined references fail to disclose at least one feature of the amended claims. Claim 54 has been amended to recite that the gel reducing additive, to the extent selected from hydroxyl functional additives, is selected from compounds with two or more hydroxyl groups. The Camilleri reference, on the other hand, teaches only the use of monofunctional compounds as gel reducing additives in the production of thermoplastic polyurethanes. Thus, even when the references are combined as suggested in the Office Action, the combination does not have a gel reducing additive among those recited in the amended claims.

Attention is drawn to column 1 of the Camilleri reference, lines 61-65:

“ . . . This invention relates to a process wherein the formation of gel particles in polyurethane is greatly reduced by employing a high molecular weight compound having a primary or secondary hydroxyl group in the reaction mixture. . . .”

Further, at column 3, lines 24 – 27, the reference states:

“The formation of gel particles in the polyurethane compositions is greatly reduced by employing a high molecular weight monofunctional compound having a primary or preferably a secondary hydroxyl group. . . . The additive can be a long-chain alcohol or mono-ester containing a single hydroxyl group Typical long-chain alcohols . . . include octanol, sec-octanol, sec-nonanol, sec-decanol, sec-dodecanol, sec-tetradecyl alcohol, cetyl alcohol, sec-cetyl alcohol, stearyl alcohol, sec-stearyl alcohol, and the like. The gel-reducing agent can also be a saturated monoester containing a hydroxyl group. . . .”

The above passages from the Camilleri reference establish that its teaching is of a monofunctional hydroxyl compound as a gel additive in a polyurethane.

In light of this teaching of the Camilleri reference, and in view of the amended claims, Applicants respectfully submit that even if the references are combined as suggested in the Office Action, the combination still does not disclose or suggest the subject matter of the amended claims, which now recite di- or higher functional hydroxyl functional gel reducing agents. For this reason, Applicant respectfully requests that the rejection, in light of the amended claims, be withdrawn.

Claims 57-59 and 80-82 are rejected as obvious over the combined Bonk and Camilleri references as applied to claims 54-56, 60-61, and 75-79 above and further in view of the Bonk ‘026 reference. The deficiencies of the combined Bonk ‘868 and Camilleri ‘026 references are described above. Applicants submit that Bonk ‘026 does not overcome those deficiencies. Accordingly, Applicants respectfully request the rejection, as applied to the amended claims, be withdrawn.

Meyer does not teach difunctional alcohols in thermoplastic (moldable) polyurethanes

Claims 62, 64, 83, and 85 are rejected as obvious over the Bonk '868 and Camilleri references as applied above and further in view of the Meyer reference (U.S. Pat. No. 4,999,213). Applicants respectfully traverse the rejection and request reconsideration.

The Meyer reference is cited for its alleged suggestion of a difunctional alcohol (“glycol ethers”) in the production of urethanes. But other teachings in Meyer demonstrate that there would be no apparent reason to combine it with the other references. For this reason, Applicants submit the amended claims are patentable over this combination of references.

The Meyer reference does not disclose compositions or methods for making low gel thermoplastic urethanes, such as are useful in the shoes of the rejected claims. Although the Meyer reference discloses curing polyurethanes in the presence of difunctional alcohols, such as glycol ethers (see column 4, line 37 – 43), the cured polyurethanes resulting from the reaction are used as coatings, not as a bulk polymerized thermoplastic polyurethane. Meyer does not teach that low gel thermoplastic urethanes are made from using the glycol ethers.

Whereas motivation to combine Camilleri and Bonk, according to the Office Action, was provided by the desirability to provide a low gel TPU of Camilleri for the shoe of Bonk, there is no corresponding motivation to combine the Meyer disclosure with either Bonk or Camilleri. The Meyer reference does not disclose TPU such as used in the Bonk shoe. Instead, it is drawn exclusively to cured coatings. Because of this, Applicants submit that the teaching of Meyer is not relevant to the thermoplastic polyurethanes as discussed in the other two references. There would be no motivation or apparent reason to combine the cured coating film of Meyer with the thermoplastic urethane such as disclosed in Camilleri and used in the Bonk '868 shoe.

For all of these reasons, the combined references do not disclose a shoe having a low gel sheet as recited in amended claim 54. Applicants respectfully request the rejection be withdrawn.

Cook does not suggest diamines in the claimed low gel sheet

Claim 63 and 84 are rejected as obvious over Bonk '868 combined with the Camilleri reference, and further in view of the Cook reference (U.S. Pat. No. 4,156,768). Applicants respectfully traverse the rejection as applied to the amended claims and request reconsideration.

The Cook reference, and in combination with Bonk '868 and the Camilleri reference, teaches away from providing a thermoplastic polyurethane having excess unreacted diamine gel reducing agent. As a result, a low gel polyurethane of the Cook reference used in a Bonk shoe would not have residual diamine gel reducing agent. As a result, subsequent regrinding of the TPU and EVOH would not produce a low gel sheet such as recited in amended claim 54.

The Cook reference discloses a process for treating polyurethanes, especially thermoplastically processable polyurethanes, to reduce the molecular weight thereof. *Column 1, lines 8-10*. The reference continues that to carry out the invention, the polymer is exposed to primary and secondary amine in the solid state, and discusses the advantages of treatment of the polymer in its solid state as opposed to treatment in a solution. *See generally, column 3, lines 12-24*. In discussing the conditions, the reference continues beginning at line column 3, line 59:

If the amount of amine and the time and temperature conditions have been properly adjusted, the treated polymer will have a reduced average molecular weight of predetermined value, and will be essentially free of any gel inclusions which may have been present. If desired, the amine treated polymer at the conclusion of the aminolysis heating cycle can be stripped under vacuum to remove any residual amine.

If the amine treated polymer is to be used in a thermoforming operation, it is highly desirable to employ a brief vacuum stripping following an aminolysis so as to remove residual amine.

The passage from column 3 states that if a thermoplastic polyurethane is made, the amine should be stripped after reaction in the solid state. The reference continues with the reason that this would be desirable, beginning at column 4, line 2:

“Any residual amine could cause further aminolysis during thermoforming under a relatively high temperature used in such operations.”

Thus, the Cook reference teaches to remove residual amine functional gel reducing agent if the polyurethane is to be used for further thermoplastic processing.

A thermoplastic polyurethane of the Cook reference therefore would have no residual amine gel reducing agent. If such a thermoplastic polyurethane were to be combined with an EVOH material of the kind disclosed in the Bonk '868 reference as suggested by the Examiner in the latest rejections, the resulting blend would contain no free or unreacted gel reducing agent, rather than the level of 0.05 to 20% by weight recited in the amended claims. The low gel sheet of the claims would not be produced from such a blend, because the blend would contain no gel reducing agent. Thus, even when combined, the references do not disclose or suggest the subject

matter of the claims. For these reasons, Applicants respectfully request that the rejection be withdrawn.

DOUBLE PATENTING REJECTIONS

Claims 54-64 and 75-85 are provisionally rejected on the ground of non-statutory type double patenting in view of claims 28-54 of co-pending application 10/633,764. The rejected claims are said to be obvious in light of those claims in view of the Camilleri reference. Applicants respectfully traverse the rejection as applied to the amended claims and request reconsideration.

The deficiencies of the Camilleri reference as applied to the amended claims is discussed above. Camilleri discloses “gel reducing additives” that are monofunctional, and does not disclose any of the gel reducing additives recited in amended claim 54. For these reasons, Applicant respectfully requests that the double patenting rejection, as applied to the amended claims be withdrawn.

CONCLUSION

For the reasons discussed above, Applicant believes that claims 54-64 and 75-85 are in state of allowability and respectfully request an early Notice of Allowance. The Examiner is invited to telephone the undersigned if that would be helpful to resolve any issues.

Respectfully submitted,

Dated: October 7, 2008

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